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ARTICLE

WHEN THE SOLUTION BECOMES THE PROBLEM: THE IMPACTS OF ADVERSARIAL LITIGATION ON SURVIVORS OF THE *EXXON VALDEZ* OIL SPILL*

J. STEVEN PICOU**

"Although it may be that we have exchanged swords and cudgels for subpoenas and depositions, an aura of combat continues to hover about the judicial process, and combat produces casualties."[1]

INTRODUCTION

The *Exxon Valdez* oil spill (EVOS) was a massive contamination event that caused immediate and lingering damage to one of the most pristine ecosystems in North America—Prince William Sound. The contamination of over 1,900 kilometers of coastline and a variety of fishing grounds, salmon streams, and bays resulted when the supertanker ran aground on Bligh Reef. The oil spill contingency plans, which were supposedly in place for such a disaster, were at best "fantasy documents."[2] The response to the spill was relatively non-existent and within four days a winter storm moved oil from the *Exxon Valdez* throughout Prince William Sound. The initial death toll was astounding. Conservative estimates suggest that over 250,000 birds, 2,800 sea otters, 300 harbor seals, 150 bald eagles, 13 orca whales, and countless numbers of fish and other marine species were instantly elim-

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1. Larry H. Strasburger, *The Litigant-Patient: Mental Health Consequences of Civil Litigation*, 27 J. AM. ACAD. PSYCHIATRY L. 203, 203 (1992).

2. LEE CLARKE, MISSION IMPROBABLE: USING FANTASY DOCUMENTS TO TAME DISASTERS 16 (1999).

inated by the toxic mass of oil that eventually spread over 44,000 square kilometers.[3] It was an obvious fact that Exxon owned the grounded vessel and lost cargo, and therefore was legally responsible for the spill and subsequent damage to the biophysical environment. Exxon was also legally responsible to residents of local communities who were economically and culturally dependent on this ecosystem. One week following the spill, Lawrence Rawls, chairman of Exxon Corporation, stated publicly that the vessel's captain, Joseph Hazelwood, was drunk when the accident occurred and that the management of this elite international corporation exerted "bad judgment" and committed a "gross error" in allowing him to command the tanker.[4] However, this seemingly clear-cut legal case against Exxon did not fully prevail because of the strategy of adversarial litigation that was pursued by Exxon for over twenty years.

Initially, local residents of the small, isolated fishing communities and Alaska Native villages were in shock. Many were horrified and severely traumatized; not only by this act of negligent contamination, but also by the incredibly inept and destructive "clean-up" that further ravaged the intertidal zones of Prince William Sound throughout the summer and early fall of 1989. Like all victims and survivors of catastrophic disasters, there was acute disruption of community life, severe mental health problems, and fears that both livelihood and quality of life were lost forever. The poison that spread throughout Prince William Sound slowly but steadfastly began to unravel the intimate social fabric of these fragile "renewable resource communities" (RRCs).

The following sections of this article address these community impacts by providing: (1) an overview of sociological typologies of disasters with a special consideration for the EVOS; (2) a review of adversarial legalism as a context for producing chronic and corrosive social impacts; (3) a review of the methodology and data used to document social and psychological impacts of the EVOS; (4) a review and presentation of recently collected community impact data; and (5) a discussion of the implications of the analysis for continuing psychosocial impacts. This discussion will document that the adversarial litigation strategy utilized by Exxon became a secondary disaster that exacerbated and extended the chronic social and psychological impacts caused by the original oil spill.

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3. R.B. Spies, S.D. Rice, D.A. Wolfe & B.A. Wright, *The Effects of the* Exxon Valdez *Oil Spill on the Alaskan Coastal Environment*, *in* PROCEEDINGS OF THE *EXXON VALDEZ* OIL SPILL SYMPOSIUM 1, 4–7 (1996) [hereinafter PROCEEDINGS]. *See generally* J. STEVEN PICOU ET AL., THE *EXXON VALDEZ* DISASTER: READINGS ON A MODERN SOCIAL PROBLEM (1999) [hereinafter DISASTER].

4. KELLIE D. KVASNIKOFF, *EXXON VALDEZ* 18 YEARS AND COUNTING 32 (2007).

Disaster Typologies

Social scientists, emergency management professionals, politicians, and the public have identified types of disasters in terms of the causal origins of the event. As such, social science researchers have identified two generic types—natural disasters and technological disasters.[5] Natural disasters originate from meteorological and seismological events that are generally beyond human control. These events, including earthquakes, hurricanes, and tsunamis, primarily damage the built and modified environments. Natural disasters may occur with minimal warning to human populations (e.g., earthquakes) or, as in the case of hurricanes, there may be a pattern of increasing warnings, followed by orders to evacuate for the most vulnerable areas projected to be in the storm's path. Natural disasters are predictable events that can be located at the intersection of vulnerable geographical areas, characterized by natural hazards, fault lines, coastal areas, and human populations.[6]

The predictability of natural disasters allows for organized systems of support to be in place to respond to their impacts, thereby allowing for, and facilitating, mitigation and assisted recovery. Most often, following these events, a therapeutic community emerges that provides for immediate aid, assistance, and services that enhance community recovery. In short, natural disasters result in political and social agreement on the fact that: "(1) a disaster occurred; (2) there are legitimate victims; (3) rescue, restoration and recovery should be 'automatically' supported by the federal, state and local government, as well as by voluntary relief organizations; and (4) an 'all clear' signal sounds that alerts survivors that the disaster has ended."[7]

In contrast, technological disasters involve anthropogenic causes associated with careless, irresponsible, or reckless behavior. Most often such behavior results from a technological system failure or the lack of organizational vigilance in the operation and management of toxic production, transportation, and containment systems. Technological disasters occur when systems thought to be under human control fail, resulting in the toxic contamination of the biophysical environment. The biophysical environment "includes all naturally occurring biotic (living organisms) and abiotic (chemical and physical factors) components and processes."[8]

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5. *See generally* Kai Erikson, A New Species of Trouble: Explorations in Disaster, Trauma, and Community (1994).

6. Susan L. Cutter, Bryan J. Boruff & W. Lynn Shirley, *Social Vulnerability to Environmental Hazards,* 84 Soc. Sci. Q. 242, 256–58 (2003).

7. J. Steven Picou, *Katrina as a Natech Disaster: Toxic Contamination and Long-Term Risks for Residents of New Orleans*, 4 J. Applied Soc. Sci. 39, 40 (2009).

8. Duane A. Gill, J. Steven Picou & Liesel A. Ritchie, *When the Disaster is a Crime: Legal Issues and the* Exxon Valdez *Oil Spill*, *in* Crime and Criminal Justice in Disaster 63 (Dee Wood Harper & Kelly Frailing eds., 2010).

Massive toxic contaminations, such as chemical and radiation releases, also directly threaten human populations as evidenced in the cases of Bhopal (India), Chernobyl (Ukraine), and Love Canal (New York). In addition to such direct threats, indirect damage is inflicted on people and communities who are economically, socially, and culturally connected to the contaminated natural environment. Given that the etiology of technological disasters is anthropogenic, survivors respond with more anger and uncertainty because the event usually occurs without warning and because the resulting acute uncertainty shifts concerns and threats well into the future.

Over the last twenty-five years, both sociological and psychological studies have demonstrated that technological disasters result in more severe social and mental health impacts than natural disasters.[9] In fact, technological disasters become "contested" and a discourse emerges concerning responsibility, contamination risks, calculation of damages, and the identification of true victims. This pattern of cascading uncertainty involves the postponement of responsive restoration activities and recovery, as well as extending the reconciliation of damages for survivors well into the future. In short, compared to natural disasters, technological disasters result in: "(1) a contested discourse and social conflict; (2) chronic community fragmentation, physical health problems, long-term mental health deterioration and resource loss-spirals; (3) a lack of timely restoration and recovery for contaminated and economically disenfranchised communities; and (4) chronic uncertainty regarding future social well-being."[10]

Given that the extent and nature of toxic contamination resulting from technological disasters is often invisible and impacts are delayed, there exists extreme ambiguity and competing social constructions of actual damages. In the United States this ambiguous situation is often deferred to the legal system and resourceful "principle responsible parties," such as government agencies and corporations, who bring legislative and financial advantages to the court room.

The EVOS as a Technological Disaster

The EVOS is a classic example of a technological disaster. In addition to this conceptual framing of the spill, it is important to emphasize that the unique fishing communities and Native villages directly impacted were extremely vulnerable to any type, or degree, of toxic contamination to the local biophysical environment. These RRCs are small, isolated communities that are intimately linked to their surrounding ecology. RRCs have been formally defined as "a population of individuals who live within a bounded

9. Fran H. Norris et al., *The Range, Magnitude and Duration of Effects of Natural and Human-Caused Disasters: A Review of the Empirical Literature*, National Center for PTSD Literature Review, http://www.tgorski.com/terrorism/Psychological%20Consequences%20Natural%20vs.Human%20Disaster%20-%20NCPTSD%20Lit%20Review.htm (last visited Jan. 12, 2010).

10. Picou, *supra* note 7, at 41.

area and whose primary cultural, social, and economic existences are based on the harvest and use of renewable natural resources."[11] These communities exist through a cycle of seasonal harvests, and the social exchange of harvested items occurs between community residents as well as across communities.[12] RRCs consist of social, cultural, and economically organized human behavior that mediates and provides interpretive responses to the biophysical environment. The responses are symbolic and often encompass spiritual values and psychological identification.

Although most RRCs have a cash economy infused within their seasonal subsistence economies, their occupational structures are not very diverse. Specifically, Cordova, which has been described as the sociological "ground zero" for EVOS social impacts, is a commercial fishing community that has a limited occupational structure. Commercial fishing is the primary economic activity and a wide variety of support occupations (e.g., net mending, vessel electronics, boat repair, and fish processing) provide a network of jobs that organizes the occupational structure. Although other sources of revenue are available (e.g., tourism, education, state agency employment, or the sale of nonrenewable resources) such jobs are extremely limited and provide minimal economic support to the community.

In summary, the EVOS manifested all of the defining characteristics that social science researchers attribute to technological disasters. This disaster was easily preventable because the captain of the *Exxon Valdez* was under the influence of alcohol and had a long history of drinking problems—a high-risk situation known by the management of both the Exxon Corporation and Exxon Shipping, Inc. The response to the spill was woefully inadequate; the ecological contamination to Prince William Sound was initially catastrophic and has continued to impact resources for the past twenty years.[13]

Furthermore, the social, economic, and cultural impacts were also catastrophic for the local fishing communities and Alaska Native villages because, unlike other rural communities in the United States, they are RRCs. The intimate links that RRCs have to the biophysical environment make them highly vulnerable to the massive ecological contamination that resulted from the spill. Nonetheless, the defining social characteristic of this catastrophe began to emerge immediately following the spill. As lawyers flooded into the impacted communities, the Exxon Corporation refocused their concerns from "clean-up" to the pending litigation, and began to ag-

11. J. Steven Picou & Duane A. Gill, *The* Exxon Valdez *Oil Spill and Chronic Psychological Stress*, *in* PROCEEDINGS, *supra* note 3, at 879, 881.

12. Liesel A. Ritchie & Duane A. Gill, *The* Selendang Ayu *Shipwreck and Oil Spill: Considering Threats and Fears of a Worst-Case Scenario*, 78 SOC. INQUIRY 184, 188 (2008).

13. *See* Stanley D. Rice, *Persistence, Toxicity, and Long-Term Environmental Impact of the* Exxon Valdez *Oil Spill*, 7 U. ST. THOMAS L.J. 55 (2009).

gressively target plaintiffs and develop a legal strategy that reflected "adversarial legalism."[14]

Adversarial Legalism and the EVOS

The litigation associated with the EVOS continues to be the subject of a widespread legal, public, and ethical discourse.[15] Given that the United States legal system is characterized by a style that promotes adversarial, legalistic, complex, and expensive procedures, the EVOS litigation unsurprisingly continued beyond the lifetime of many plaintiffs. As such, Kagan's description of the American system of "adversarial legalism" provides the context within which pre-trial, trial, and post-trial activities emerged over the years. In contrast to the inquisitorial model of adjudication used in most countries, adversarial legalism is characterized by: (1) more complex and detailed legal rules; (2) very formal adversarial strategies involving the resolution of scientific and procedural disputes; (3) expensive litigant involved forms of legal contestation; (4) extensive utilization of punitive legal sanctions; (5) frequent and delaying interventions regarding administrative rulings; (6) controversies that continuously address legal rules; and (7) uncertainties, changes, and unpredictable court decisions.[16] It is obvious that technological disasters such as the EVOS generate a very complex form of litigation that involves scientific debate over "factual information" and raises historical issues of jurisprudence that require numerous modern legal interpretations and rulings. As such, although there was factual certainty as to why and how the EVOS occurred, there was extreme uncertainty regarding impending legal rulings and the final resolution of the litigation.

Soon after the spill, criminal charges against Exxon were resolved through a negotiated settlement with the federal government and the State of Alaska.[17] With civil litigation on the horizon, Exxon initiated their strategy of adversarial legalism by challenging plaintiffs' efforts to establish a mandatory class, aggressively narrowing claims and liability, divesting the authority of Alaska state courts, contesting privileged documents, and initiating a costly five-year discovery war that deposed commercial fishers,

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14. *See generally* Robert A. Kagan, *Adversarial Legalism and American Government*, 10 J. Pol'y Analysis & Gov't 301 (1991).

15. *See* Catherine M. Sharkey, *The* Exxon Valdez *Litigation Marathon: A Window on Punitive Damages*, 7 U. St. Thomas L.J. 25 (2009); Doug Rendleman, *Common Law Punitive Damages: Something for Everyone?*, 7 U. St. Thomas L.J. 1 (2009).

16. *See generally* Robert A. Kagan et al., Regulatory Encounters: Multinational Corporations and American Adversarial Legalism (2000); Kagan, *supra* note 14, at 372; Brent K. Marshall, J. Steven Picou & Jan Schlichtmann, *Technological Disasters, Litigation Stress, and the Use of Alternative Dispute Resolution Mechanisms*, 26 L. & Pol'y 289, 290 (2004).

17. Gill, Picou & Ritchie, *supra* note 8, at 71.

Alaska Natives, and expert witnesses.[18] Exxon also extended subpoenas to independent third-party experts who were harassed, threatened, and forced to go to federal court to protect respondent confidentiality and the integrity of their research.

Along these lines, I was independently funded by the National Science Foundation to study the social impacts of the EVOS from 1989 to 1992. After plaintiffs' attorneys referenced several of my publications in court documents, Exxon's attorneys and experts demanded, through a series of subpoenas, motions, and affidavits, that I provide them with all data, including names, addresses, and other confidential information. Following a nine-month legal battle in the Federal Court for the Southern District of Alabama, the magistrate's ruling allowed for the protection of confidential data and gave Exxon's statistical expert limited access to redacted data collected in 1989 and 1990.[19] Needless to say, all research project activities were halted during these legal proceedings.

The civil litigation came to a resolution in the fall of 1994. After four and a half months, the three-phase trial resulted in jury awards amounting to $287 million for compensatory damages and a $5 billion punitive damage award. Nonetheless, Exxon continued to maintain their strategy of adversarial legalism by filing repeated motions to overturn the jury verdict, and by filing countless motions and complaints that delayed the issuing of a final judgment until September 24, 1996. So, seven years after the spill, and two years after the trial verdict, the "interest clock" began on the punitive damage award. Interestingly, the plaintiffs lost approximately $700,000 per day during this two-year period.[20] Nonetheless, by this time Exxon's legal strategy had realized the advantages of delaying. Exxon continued to delay through a relentless strategy of adversarial legalism initiated in February 1997 when attorneys filed a notice of appeal to the Ninth Circuit Court of Appeals.[21]

Following a series of motions for a new trial that lasted until 2001, the Ninth Circuit ruled against Exxon, but found that the $5 billion punitive damage award was excessive. The amount of money that would be an appropriate "reduction" of the punitive damage award was debated between the Ninth Circuit and the Federal District Court in Alaska for five years. In 2006, the Ninth Circuit reduced the award to $2.5 billion and Exxon appealed to the U.S. Supreme Court. In 2007, the Supreme Court agreed to hear Exxon's appeal and on June 25, 2008, despite ruling that Exxon was

18. WILLIAM B. HIRSCH, *Justice Delayed: Seven Years Later and No End in Sight*, *in* DISASTER, *supra* note 3, at 272–86.

19. Eliot Marshall, *Court Orders 'Sharing' of Data*, 261 SCI. 284, 284 (1993); J. Steven Picou, *Compelled Disclosure of Scholarly Research: Some Comments on "High Stakes Litigation"*, 59 L. & CONTEMP. PROBS. 149, 154–55 (1996); J. Steven Picou, *Sociology and Compelled Disclosure: Protecting Respondent Confidentiality*, 16 SOC. SPECTRUM 209, 222 (1996).

20. Hirsch, *supra* note 18, at 286.

21. Jim Clarke, *Exxon Appeals Verdict*, ANCHORAGE DAILY NEWS, June 6, 1997, at B1.

responsible for the spill and punitive damages were allowable, the highest court in the United States reduced the punitive damage award to $507 million.[22]

The twenty years of legal maneuvering that characterized the EVOS litigation was an enduring, stress-provoking process. Patterns of anxiety, depression, and Post-Traumatic Stress Disorder (PTSD) that often plague plaintiffs have been identified as the "litigation response syndrome."[23] It is apparent that survivors of the EVOS experienced a series of secondary disasters that included long-term resource and economic losses due to failures of the pink salmon and herring fisheries, as well as delayed patterns of revictimization that resulted from Exxon's aggressive, and sometimes frivolous, strategy of adversarial legalism. Many social scientists have conducted research on the social and psychological impacts of the EVOS for twenty years. The next section of this article describes the methodology used in these past studies and information recently collected in 2000, 2006, and 2009. Data from these latest surveys will be analyzed to determine long-term social and psychological impacts of the EVOS litigation.

Methodological Information

Since August 1989, a number of colleagues and I have participated in a twenty-year research agenda that has focused on identifying the community, economic, cultural, social, and psychological impacts of the EVOS.[24] Data were collected through random household community surveys and in-depth personal interviews of high-risk populations, most notably commercial fishermen and Alaska Natives. The primary community of interest for the data analyzed and reviewed in this article is Cordova, Alaska. Cordova is a small, isolated fishing community located on Orca Inlet in southeastern Prince William Sound. The population of Cordova ranges from approximately 2,500 in the winter to 3,500 in the summer fishing season. The town is nestled on the edge of the Chugach National Forest and is bordered by the Copper River Delta, providing an incredible array of scenic views of glaciers, old-growth forests, mountains, rivers, and streams. First settled by prospectors in the late nineteenth century and originally home to Aleut and Eyak Alaska Natives, Cordova's early economy was dependent on copper mining until the late 1930s. The town has been isolated since the 1964 Alaska Earthquake and has a modern cash economy based primarily on commercial fishing. At the time of the spill, residents of Cordova owned 55

22. Gill, Picou & Ritchie, *supra* note 8, at 73, 74.

23. Paul R. Lees-Haley, *Litigation Response Syndrome*, 6 Am. J. Forensic Psychol. 3, 3 (1988).

24. Most notably, I thank Duane Gill, Cecelia Martin, Kati Arata, Dave Johnson, Liesel Ritchie, Maurie Cohen, and the late Brent Marshall for their collaboration, fieldwork, and support throughout this time.

percent of the salmon fishery permits and 44 percent of the herring permits in Prince William Sound.[25]

Community Surveys

Residents of Cordova were interviewed in 1989, 1991, 1992, 1995, 2000, 2006, and 2009. In 1989, a geographically-stratified random household sample was selected and personal interviews were conducted. In 1991 and 1992, this sample was systematically expanded using random procedures. In 1989, 1991, and 1992, data were also collected in the communities of Petersburg and Valdez. Petersburg is located in Southeast Alaska and was used as a demographically-matched control community in these early studies since it was minimally impacted by the EVOS.

Random digit dialing telephone surveys were used to collect the community survey data in Petersburg. A geographically-stratified random household sample was also collected in Valdez and personal interviews were conducted. Valdez was selected because it has a rather diversified occupational structure and it served as a non-renewable resource community in Prince William Sound.[26] In-depth psychological interviews were collected from commercial fishermen in Cordova in 1995.[27] In 2000, 2006, and 2009, random digit dialing telephone interviews were conducted in Cordova. These data provide the source of information for an evaluation of the chronic social impacts of the EVOS litigation. In particular, data from the community of Cordova allows for a systematic assessment of social and psychological impacts over the last twenty years.

Indicators and Measures

All community surveys contained a number of primary indicators which were used to measure demographic characteristics, social disruption, spill-related psychological stress, and personal depression. The Impact of Events Scale (IES) was the primary indicator of psychological stress resulting from the original oil spill and the subsequent litigation process.[28] This standardized scale measures event-related cognitive and behavioral responses that have occurred over the last week for a specific stress-producing event. The IES consists of fifteen items that provided statements of potential responses to an extraordinary event, such as a hurricane or an

25. J. Steven Picou et al., *Disruption and Stress in an Alaskan Fishing Community: Initial and Continuing Impacts of the* Exxon Valdez *Oil Spill*, 6 INDUS. CRISIS Q. 235, 241 (1992) [hereinafter *Disruption and Stress*].

26. *See* Picou & Gill, *supra* note 11, at 884 (providing more detailed information on these samples).

27. *See* Catalina M. Arata et al., *Coping with Technological Disaster: An Application of the Conservation of Resources Model to the* Exxon Valdez *Oil Spill*, 13 J. TRAUMATIC STRESS 23, 23 (2000).

28. *See generally* Mardi Horowitz et al., *Impact of Events Scale: A Measure of Subjective Stress*, 41 PSYCHOSOMATIC MED. 209 (1979).

earthquake. The contents of the scale were originally developed from statements made by individuals who had personally experienced stressful events. The conceptualization of the IES is directly related to the fact that the more stressful an event is, the more likely that it will produce an increased incidence of recurring, distressing ideas, thoughts, and feelings as well as deliberate attempts to avoid or suppress such intrusive, cognitive reminders of the specific stressful event.[29]

The IES is a valid and reliable indicator of event-related psychological stress and has been utilized for thirty-five years in the sociological and psychological disaster research literature. The IES also correlates with patterns of PTSD experienced by residents of communities that have been severely impacted by disasters. Some researchers have argued that the IES actually underestimates the severity of stress patterns experienced by victims of disasters.[30] Nonetheless, the IES provides a direct measure of event-related psychological stress and also serves as an empirical indicator for inferring symptoms of PTSD. For the purposes of this research, only the intrusive or cognitive component of the scale is utilized. This is a seven-item scale. The Cronbach's alphas calculated for the EVOS stress scale were very strong, ranging from .82 to .90 over the years.[31]

Personal depression was measured by a modified version of the Center for Epidemiological Studies Depression Scale (CES-D). This scale, like the IES, measures experiences over the last seven days. The depression scale solicits self-ratings of the daily frequencies of such experiences as feeling sad, feeling lonely, or having trouble concentrating. This ten-item scale is a valid and reliable measure of depression.[32] Scores on this summated depression index range from zero to seventy; the Cronbach's alphas calculated for this scale were exceptionally high—.90 or greater.

Review of Early Social Science Research: 1989–1997

After the EVOS, three major social science research projects were initiated. The Oiled Mayors Study utilized data from 1990 and included eleven Prince William Sound communities that were physically oiled by the EVOS. Household surveys, field interviews with community leaders, and secondary economic data were collected for this cross-sectional project. A second project, primarily sponsored by the Minerals Management Service, collected ethnographic data from key informants in ten communities. This

29. *See id.*

30. *E.g.*, James H. Shore et al., *Psychiatric Responses to Disaster: The Mount St. Helens Experience*, 143 Am. J. Psychiatry 590 (1986).

31. *See generally* Lee J. Cronbach, *Coefficient Alpha and the Internal Structure of Tests*, 16 Psychometrika 297 (1951) (Cronbach's alpha is a statistical coefficient that estimates the internal consistency of reliability for a set of variables. The value indicates the degree to which variables measure a single unidimensional latent construct. Values of .70 or greater are acceptable).

32. *See* John Mirowsky & Catherine E. Ross, Social Causes of Psychological Distress (1989).

project gathered information on a variety of demographic characteristics, including Alaska Native data, dependence on commercial fishing, and test or control status. The third project was the Cordova Community Survey, which was primarily funded by the National Science Foundation and the Prince William Sound Regional Citizens' Advisory Council. This research effort has collected longitudinal data from 1989 to 2009. For this project, the commercial fishing community of Cordova has been the primary source of data; although over the years, various expansions have been made in terms of other communities and the collection of ethnographic data for Alaska Natives and commercial fishermen.[33]

In 1989, the EVOS sent a massive social shock wave throughout communities in Prince William Sound as well as across the state of Alaska. Residents in Prince William Sound saw their communities inundated with clean-up workers, journalists, state and federal officials, and attorneys. Commercial fishing and subsistence harvests were abruptly halted. The clean-up began, crime rates soared, mental health agencies were overwhelmed, housing resources were exhausted, and local officials struggled to meet basic community needs such as sewer processing, garbage collection, and shelter due to the rapid, unplanned increase in population.

This general pattern of social disruption was also apparent for local residents. For example in 1989, Cordova residents reported: 38 percent had family relations disrupted, 52 percent had changed their plans for the future, 68 percent reported work changes, and 96 percent stated that their community had changed.[34] Furthermore, extremely high levels of spill-related psychological stress were observed. In 1989 and 1990, mean IES stress levels for commercial fishermen were moderate to severe, indicating clinical levels of impairment.[35] Comparisons to a control community further validated that these observed social and psychological impacts of the EVOS were severe in the Cordova community.

This pattern of psychological stress and social disruption persisted through 1995. Significantly higher levels of psychological stress were observed for commercial fishermen in Prince William Sound and, in particular, commercial fishermen in Cordova for 1991 and 1992.[36] Once again, control community comparisons provided further evidence that the observed levels of psychological stress were significantly higher in both Cordova and Valdez. Furthermore, this acute pattern of initial social disruption and psychological stress was also documented for Alaska Natives in the

33. For a detailed review of these studies, see J. Steven Picou et al., *Community Impacts of the* Exxon Valdez *Oil Spill: A Synthesis and Elaboration of Social Science Research*, *in* SYNTHESIS: THREE DECADES OF RESEARCH ON SOCIOECONOMIC EFFECTS RELATED TO OFFSHORE PETROLEUM DEVELOPMENT IN COASTAL ALASKA 279 (Stephen R. Braund & Jack Kruse eds., 2009).

34. *Disruption and Stress*, *supra* note 25, at 246 (1992).

35. *Id.*

36. Picou & Gill, *supra* note 11, at 890.

Cordova community.[37] In summary, four years after the EVOS, sociological research clearly documented that commercial fishermen and Alaska Natives were the two groups who were at high risk for chronic social and psychological impacts. Both groups were intimately linked to the contaminated waters of Prince William Sound. Commercial fishermen were linked economically to the various salmon and herring fisheries, while Alaska Natives were linked culturally through their various seasonal subsistence harvests.

Spill-related mental health problems were found to persist through 1995 from an in-depth study of commercial fishermen. This research utilized clinical psychological indicators and found that 23 percent of male and 13 percent of female fishermen manifested clinical levels of anxiety. Clinical levels of depression were observed for 39 percent of males and 20 percent of females. PTSD symptoms characterized more than one out of every three commercial fishermen six years after the EVOS.[38]

Further analysis revealed that these severe mental health problems were predicted by economic, social, and coping variables. Commercial fishermen who had experienced "income loss spirals" following EVOS manifested increased "symptoms of depression, anxiety, and PTSD."[39] Furthermore, commercial fishermen who experienced social conflict in the form of the loss of interpersonal relationships with other community residents and used avoidant or self-isolating coping strategies also had more severe mental health problems.[40] These results identified the emergence of a "corrosive community" and a complete lack of community recovery more than six years after the spill. These findings also initially identified a pattern of chronic psychological impacts that would persist well into the future.

The concept of corrosive community was first identified in Erikson's seminal research on technological disasters and collective trauma, and was later conceptually elaborated by Freudenburg.[41] Corrosive communities are characterized by a loss of trust in civic institutions, social isolation, group conflict, mental health problems, deteriorating social relationships, and the emergence of "corrosive social cycles" which perpetuate the continuous loss of "communality."[42] Ostensibly, by 1995, the Cordova community, in

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37. Christopher L. Dyer et al., *Social Disruption and the Valdez Oil Spill: Alaska Natives in a Natural Resource Community*, 12 SOC. SPECTRUM 105 (1992); Duane A. Gill & J. Steven Picou, *The Day the Water Died: Cultural Impacts of the* Exxon Valdez *Oil Spill*, *in* DISASTER, *supra* note 3, at 167.

38. Arata et al., *supra* note 27, at 34.

39. *Id.* at 35.

40. *Id.*

41. *See generally* KAI T. ERIKSON, EVERYTHING IN ITS PATH: DESTRUCTION OF A COMMUNITY IN THE BUFFALO CREEK FLOOD (1976); ERIKSON, *supra* note 5; William R. Freudenburg, *Contamination, Corrosion and the Social Order: An Overview*, 45 CURRENT SOC. 19 (1997).

42. *See* ERIKSON, *supra* note 41; J. Steven Picou & Brent K. Marshall, *Katrina as Paradigm Shift: Reflections on Disaster Research in the Twenty-First Century*, *in* THE SOCIOLOGY OF KA-

particular commercial fishermen and Alaska Natives, was experiencing chronic economic, social, and mental health problems that were directly related to the EVOS. Although a comprehensive community education program, which was designed to improve social relations and reduce mental health problems, was implemented from 1996 to 1997, social problems and psychological stress persisted.[43] The question of why this chronic pattern of distress continued to plague community residents became an important research concern for social scientists studying the social impacts of the EVOS.

Adversarial Legalism as a Secondary Stressor: 1998–2009

In a manner similar to the long-term toxicological studies of the continuing impacts of the EVOS on the ecology and marine resources of Prince William Sound, long-term research on the social impacts of the EVOS has revealed a new explanation for the persistence of chronic community distress. The role of litigation for community recovery has rarely been addressed in disaster research literature. However, two recent studies have provided strong empirical evidence that being a litigant in the EVOS civil trial resulted in a shift in the source of social and psychological stress from the original oil spill to the lengthy adversarial litigation that emerged. Although being a commercial fisherman resulted in indirect relationships that predicted psychological stress and community impacts, the impacts of being a litigant began to emerge by 1992. Indeed, research published in 2004 described this shift as follows:

> According to our data analysis, however, the most important social structural characteristic was being a plaintiff in the civil litigation. In fact, one could argue that the EVOS generated a new and problematic social structural characteristic in Cordova, that is, the status of litigant. In turn, litigants became vulnerable to a secondary source of trauma, litigation stress, which resulted from time spent with lawyers, trying to understand complex litigation issues, and recurrent unpleasant memories of the spill.[44]

These findings are important since, as early as the pre-trial phase in the EVOS litigation, empirical evidence identified that litigants suffered more severe levels of stress and perceived significantly more serious types of damage to their community.[45] These findings established that the litigation played a deleterious role in preventing timely community recovery.

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trina: Perspectives on a Modern Catastrophe 1 (D. Brunsma, D. Overfelt & J.S. Picou eds., 2007).

43. For more detailed information on this program, see J. Steven Picou, *Disaster Recovery as Translational Applied Sociology: Transforming Chronic Community Distress*, 32 Humboldt J. Soc. Rel. 123 (2009).

44. J. Steven Picou et al., *Disaster, Litigation, and the Corrosive Community*, 82 Soc. Forces 1497, 1518 (2004).

45. *Id.* at 1518–19.

The corrosive social pattern that emerged from the EVOS litigation persisted for over a decade after the spill and has increasingly become the primary source of late-onset community disruption and psychological stress. In short, the pattern of post-trial "adversarial legalism" has continued to produce an independent secondary disaster, which is the primary source of ongoing secondary trauma.[46] From 1991 to 2000 the psychological stress levels of litigants remained relatively high and the difference in mean stress between litigants and non-litigants was greater in 2000 than in 1992. Furthermore, by 2000, the only variable that predicted spill-related symptoms of PTSD was being a litigant. The impacts for commercial fishermen had disappeared after a decade, but being involved in the litigation became the driving force behind persistent chronic social disruption and psychological stress.[47]

Turning to Figure 1, data are presented on levels of spill-related intrusive psychological stress for the Cordova community, residents involved in the litigation, and residents who were not plaintiffs. The persistence of psychological impact for over twenty years is apparent. However, psychological stress levels for litigants are higher and have been maintained at relatively high levels from 2000 to 2009—the time period when appeals were repeatedly offered to the Ninth Circuit. Interestingly, in 2006, when the Ninth Circuit cut the punitive damage award to $2.5 billion and Exxon's attorneys announced that they would appeal their case to the U.S. Supreme Court, stress levels for litigants were higher than they had been during the course of legal deliberations (fig. 1). The data for 2009, collected after the Supreme Court decision, show a modest reduction in stress levels when contrasted across time. However, the 2009 stress levels were similar to those observed in 1991, suggesting the continuation of psychological impacts shortly after the litigation was resolved.

46. *See* Duane A. Gill, *Secondary Trauma or Secondary Disaster? Insights from Hurricane Katrina*, 27 SOC. SPECTRUM 613 (2007).

47. Marshall, Picou & Schlictmann, *supra* note 16, at 297–98.

FIGURE 1. MEAN EVOS RELATED STRESS LEVELS FOR CORDOVA, LITIGANTS AND NON-LITIGANTS: 1991–2009

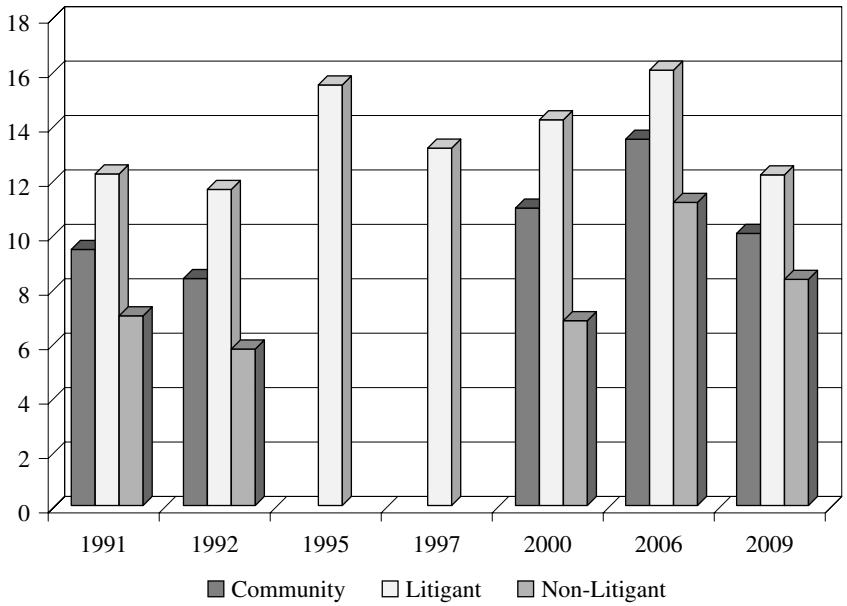

Table 1 provides data on the sources of EVOS-related stress, as well as the sources of personal depression from 1989 to 2009. Multiple regression models were calculated for the years that data were available.[48] Over this twenty-year period, the primary predictor of psychological stress apparently shifted from status as commercial fishermen to litigants. Where control community data are available, the Cordova community was also found to be a significant predictor of stress. The standardized beta coefficients for commercial fishermen began to decline in magnitude in 1992 and essentially went to zero from 2000 to 2009. Nonetheless, the coefficients observed for litigant status began to emerge in 1991, and from 2000 to 2009 remained as significant predictors for both spill-related stress and personal depression. These results strongly suggest that, over time, the adversarial, long-term litigation associated with the EVOS emerged as a late-onset stressor for plaintiffs. This shift in the source of stress has perpetuated mental health problems for spill survivors for twenty years. This pattern reveals that the litigation has become a secondary disaster operating independently of the continuing ecological contamination and loss of fisheries resources.

48. *See generally* JACOB COHEN ET AL., APPLIED MULTIPLE REGRESSION/CORRELATION FOR THE BEHAVIORAL SCIENCES (2002).

TABLE 1. REGRESSION MODELS FOR SPILL-RELATED PSYCHOLOGICAL STRESS AND PERSONAL DEPRESSION: 1989-2009, CORDOVA, AK

Predictor Variables	1989 Stress	1989 Depression	1991 Stress	1991 Depression	1992 Stress	1992 Depression	2000 Stress	2000 Depression	2006 Stress	2006 Depression	2009 Stress	2009 Depression
Gender	.178	-	.068	-	.011	-	.072	-	.033	.100	.065	.093
Community	.274**	-	.284***	-	.157*	-	N/A	-	N/A	N/A	N/A	N/A
Commercial Fisher	.327**	-	.132*	-	.175*	-	.002	-	.008	.003	.018	.033
Litigant	N/A	-	.250***	-	.312***	-	.382***	-	.285***	.224***	.226**	.211**
R^2	.165	-	.252	-	.168	-	.132	-	.071	.080	.037	.033
N	190		324		269		183		278		276	

*pr<.05; **pr<.01; ***pr<.001

Table 2 provides information on the role of the litigation and the Supreme Court decision in maintaining intrusive stress patterns for litigants and non-litigants in the Cordova community. The data on the litigation were collected in 2006, while the data on the Supreme Court decision were collected in 2009. It is apparent that in 2006 the ongoing litigation activities were highly stressful for plaintiffs residing in Cordova. A majority of those surveyed manifested intrusive cognitive thoughts, images, and feelings about the litigation. In 2006, the Ninth Circuit Court of Appeals reduced the punitive damage award by half and Exxon's attorneys announced that they planned to appeal this decision to the Supreme Court. As noted in Figure 1, psychological stress levels were extremely high. The data in Table 2 provides further support for this trend. In addition, twenty percent of all litigants reported sleep problems and fifteen percent were having dreams about the litigation, suggesting significant mental health issues for plaintiffs. In 2006, seventeen years after the EVOS, approximately seven out of every ten plaintiffs manifested PTSD-related symptoms, and one out of five were experiencing significant problems related to sleeping because of the lingering, adversarial litigation.

TABLE 2. INTRUSIVE STRESS ITEMS FOR THE EVOS LITIGATION (2006) AND THE EVOS SUPREME COURT DECISION (2009).

OVER THE LAST SEVEN DAYS. . .	**2006 Litigation**		**2009 Supreme Court Decision**	
	Litigant	**Non**	**Litigant**	**Non**
I thought about the litigation/Supreme Court Decision when I didn't want to (% sometimes or often).	68	38	55	32
Image related to the litigation/Supreme Court Decision popped into my head (% sometimes or often).	59	35	50	27
I had trouble falling asleep or staying Asleep because images or thoughts of The litigation/Supreme Court Decision came into my mind (% sometimes or often).	20	10	21	6
I had waves of strong feelings about the Litigation/Supreme Court decision (% sometimes or often).	72	49	58	34
I had dreams about the litigation/ Supreme Court decision (% sometimes or often).	15	5	10	2
Reminders of it brought back feelings I First felt about the litigation/Supreme Court decision (% sometimes or often).	69	43	58	41

Turning to the Supreme Court decision, Table 3 reveals that the final decision in 2009, approximately eight months after the Court drastically reduced the punitive damage award to $507 million, acted as an independent stressor for litigants. Ironically, twenty years after the spill, one out of every two plaintiffs manifested symptoms of intrusive psychological stress directly related to the Court's action. The seriousness of the psychological stress produced is obvious given that intrusive problems related to sleep and dreams continued to persist long after the final legal decision was rendered. Ostensibly, the outcome of twenty years of adversarial legalism has not produced communal or psychological recovery for EVOS survivors. In reality, the litigation process and specific court rulings resulted in a series of emergent stressors that continuously re-victimized the plaintiffs. The litigation served as a constant reminder of the EVOS and the court rulings produced anger, injured the psychological wellbeing of plaintiffs, maintained uncertainty, and denied any degree of recovery for communities impacted by the spill.

Information on the aftermath of the Supreme Court decision and the consequences of the money received by plaintiffs in Cordova is presented in Table 3. Forty-four percent of the litigants, and nineteen percent of the non-litigants, did not find closure from the fact that the litigation was over. Indeed, eighty-five percent of the litigants felt that the money received from Exxon would not allow them "to put the spill behind [them]." Only six percent felt that the amount of money was "fair" and only twenty-one percent reported that the money they received provided any significant financial help. Unexpectedly, significant tax problems characterized forty-one percent of the plaintiffs who received funds, and one out of three reported that the money became an independent source of stress for them. Even the fact that payments were made in November and December of 2008 caused problems regarding taxes and produced additional stress for plaintiffs.

TABLE 3. RESPONSES TO THE SUPREME COURT DECISION AND MONEY RECEIVED FOR LITIGANTS AND NON-LITIGANTS (2009).

	Litigants %	**Non-Litigants %**
Now that the court case is complete, I feel I can move on with my life (% who disagree).	44	19
Receiving the money has allowed me to put the spill behind me (% who disagree).	85	N/A
The amount of money I received from the litigation was fair (% agree).	6	N/A
The amount of money I received has been a significant help financially (% agree)	21	N/A
Taxes have been a problem for the money I received (% agree).	41	N/A
The money I received has become a source of stress for me (% agree).	30	N/A

CONCLUSIONS

The ecological impacts of the EVOS are still unfolding in Prince William Sound. The lingering amounts of volatile oil, and damage to marine resources and habitats, continue to be monitored by scientists. The legal issues that have emerged will be the subject of future debates on judicial responsibility, legal ethics, and Exxon's strategy of adversarial legalism. Nonetheless, both the ecological destruction, and the drawn out legal resolution, have had significant and debilitating consequences for the residents of the communities in the spill area. Over the last twenty years spill survivors have endured economic, resource, and asset losses that have severely impacted their social well-being.

Important for the purpose of this article are the more intangible losses such as quality of life, social capital, mental health, family stability, and maintenance of cultural values. Clearly, the survivors were in no way responsible for the spill, and their only option for restitution was the federal court system of the United States. This is where the "solution" for obtaining redress for damages to the people became a twenty-year "problem" for the people.

According to the social science research reviewed and the original data presented, the litigation apparently became an independent stressor that caused disruption and psychological stress. Furthermore, the Supreme Court's decision has now become the most recent addition to this secondary disaster and portends continuing social, economic, cultural, and psychological problems. Although the finality of

the decision is apparent, overcoming twenty years of collective and individual trauma will not be easy for survivors. The presence of lingering oil and the lack of ecological recovery will serve as a constant reminder of the EVOS to the residents of Prince William Sound. The long-term collapse of the herring fishery, and the fact that only ten out of the twenty-six threatened species and resources have been declared as "recovered," continues to produce anger, stress, conflict, and community disruption.[49] The intimate links of RRCs to their biophysical environment preclude the ability of survivors to ignore these ecological problems in the future.

The twenty years of litigation has also exerted a tremendous toll on the communities and residents of Prince William Sound. As research shows, corrosive communities emerged over time, people became fragmented, social relationships eroded, conflicts emerged, and serious mental health problems affected residents.[50] In short, the litigation drained these fragile RRCs of their social and cultural capital, and destabilized residents' sense of community and trust in others.[51] Disaster researchers agree that rebuilding strong interpersonal networks and "stabilizing the social environment and creating opportunities for survivors to resume their livelihoods and take control of their lives" are the most critical elements for collective and individual disaster recovery.[52] However, the Supreme Court's decision and the allocation of minimal financial payments have resulted in continuing economic, social, and psychological losses such that community recovery may not occur during the lifetime of plaintiffs. Ecologically, the spill's damage is not over, and sociologically, the Supreme Court's decision will never be accepted.

This sense of permanent human impact was expressed in 2009 by a commercial fisherman in the following manner:

> I mean, I can't even say the Pledge of [Allegiance to] the flag anymore because at the very end it says "with liberty and justice for all." What the [bleep] are you talking about, you know? It's [a] political rip-off. I mean that's, that's why I am as angry as I am about it. It isn't like we lost because of something that was basically legal. We just got [screwed].[53]

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49. EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL, UPDATE ON INJURED RESOURCES AND SERVICES (2006), http://www.evostc.state.ak.us/Universal/Documents/Publications/2006IRSUpdate.pdf.

50. *See generally* Arata et al., *supra* note 27; Picou et al., *supra* note 44.

51. Liesel A. Ritchie & Duane A. Gill, *Social Capital Theory as an Integrating Framework for Technological Disaster Research*, 27 SOC. SPECTRUM 1 (2007).

52. Derrick Silove & Richard Bryant, *Rapid Assessments of Mental Health Needs After Disasters*, 296 JAMA 576, 577 (2005); *see also* BRENDA D. PHILLIPS, DISASTER RECOVERY (2009).

53. Gill, Picou & Ritchie, *supra* note 8, at 78.

The EVOS was the quintessential technological disaster. It was caused by reprehensible human error and resulted in the massive contamination of a pristine natural environment. There was a complete organizational response failure and the ecology continues to be damaged. Furthermore, after twenty years of seemingly mindless litigation, survivors view the final judgment rendered by the Supreme Court as a heinous miscarriage of justice. Ecological and sociological recovery from the EVOS may never occur because of the massive and lingering contamination and the failure of the United States legal system to address the documented damages to the people and communities of Prince William Sound. Research on both the ecological and sociological damages should continue — twenty years after running aground on Bligh Reef, the EVOS continues to manifest serious risks throughout the impact region.